USDA

Preliminary Decision Memo
OZ Research Project

USDA Forest Service
Bend Fort Rock Ranger District, Deschutes National Forest
Deschutes County, Oregon
T.19 and 20 S., R.11 E., sections 3, 4, 5, 6, 11, 12, and 34

The Bend Fort Rock Ranger District is proposing to implement a study, conducted by Oregon State University (OSU), that will test stand differences in structural development over time using four silvicultural treatments in second-growth, even-aged ponderosa pine. The study is consistent with the Deschutes National Forest Land and Resource Management Plan (LRMP) as amended.

Background

The purpose of the experiment is to test four alternate silvicultural techniques, including no-treatment, to expedite the development of large trees, enhance within-stand diversity, and evaluate two methods to create uneven-age stand structure. The study, proposed by Stephen Fitzgerald of Oregon State University (letter on file 30 July 2001), will evaluate short and long-term effects of these treatments on various stand and forest attributes including: change in forest structure, forest development (including understory response), specific wildlife habitat attributes, crown fire potential, overstory tree response, and seedling and regeneration recruitment and development. Each treatment is designed to take the stand in a different successional trajectory over time to meet pre-determined objectives. Little published information exists on comparing these kinds of treatments over long time frames in even-age, second growth ponderosa pine forests. Guidelines developed from this research should also help managers develop prescriptions for stands where increasing fire resistance is also an objective.

In Central Oregon, a substantial portion of the old-growth ponderosa pine forest was clearcut-harvested about 80 years ago. The landscape was left to regenerate naturally and resulted in dense, even-aged stands which today are increasingly susceptible to insect and disease outbreaks, and stand replacement fire. These stands differ dramatically from historical conditions, so their future structural development is not completely known. Silvicultural interventions, e.g., thinning, provide an opportunity to influence that development for various objectives. Such objectives often include improving landscape resiliency, including resistance to wildfire or insect and disease outbreaks. They may also include restoration of forest stand structure and enhancement of mature forest wildlife habitat.

The proposed study would contribute towards meeting research needs identified in the Deschutes Land and Resource Management Plan (Forest Plan) as being desirable to fill prior to preparation of the next Forest Plan (pages 2-11 through 2-14). The following questions were among those listed in the Forest Plan pertaining to uneven-aged management:

- How does uneven-aged management meet the habitat requirement of deer and elk?
- How does uneven-aged management meet the habitat requirements for old-growth dependent species?
- What is the effectiveness of natural regeneration in uneven-aged stands?
- What are compaction problems associated with uneven-aged management practices?
- What is the role of prescribed fire in uneven-aged management?
- How can stands be managed to provide for old-growth characteristics?

I. Study Area

The study is proposed in second-growth ponderosa pine stands south of Bend, Oregon (between High Desert Museum and Sunriver) in Townships 19 and 20 South, Range 11 East (Figure 1). The study sites are on pumice soils that are coarse textured with high infiltration rates and have low fertility. The soil is

the result of volcanic deposition from Mount Mazama about 7,600 years ago and other volcanic events in the Cascade Range. They are characterized by sandy pumice volcanic ash and pumice lapilli over sandy to loamy buried soils. Elevations are from 4200 ft. to 4400 ft. Annual precipitation is approximately 20 inches. Site quality, as measured by Barrett's (1978) site index is 80-90 (dominant trees grow from seedlings 80-90 feet in 100 years). The study sites are on ponderosa pine/bitterbrush/Idaho fescue plant association (Volland 1985). Greenleaf manzanita (*Artostaphylos patula*) is also common with bitterbrush (*Purshia tridentata*) in the understory. With fire suppression some lodgepole pine (*Pinus contorta*) encroachment is occurring in the study site most to the southeast that is at a slightly higher elevation than the other study sites. Bitterbrush is more prevalent in the understory than it might have been with frequent low intensity fires that occurred prior to fire suppression and livestock grazing. Livestock grazing in the late 1800s and after the turn of the century may have altered understory composition in other ways. Wildlife habitat was correspondingly altered by changes in vegetation composition and structure.

Typical pre-European settlement ponderosa pine forest consisted of open stands, dominated by a few large trees, often in groups, with little understory vegetation and maintained most often by frequent low-intensity fires every 5-30 years (Bork 1984, Weaver 1943, Youngblood et al. 2004). Historically, large tree density in old-growth ponderosa pine stands in Oregon varied from 12 to 40 trees per acre (Munger 1917). The Oz Research Project sites were logged (clearcut with some smaller trees left) in the 1920s and 1930s. Today's trees are the result of natural regeneration that occurred despite the very large (square miles) clearcuts.

Stand density and fuel accumulation have increased significantly compared to historical conditions. Thinning to reduce that density occurred in the project area in 1967 south of the High Desert Museum, and between 1981 and 1990 in the vicinity of Sunriver and to the east of there, according to Bend/Ft. Rock Ranger District records. Some trees were also pruned by fire crews during that latter period. Cattle grazing last occurred in the southeast part of the study area in 1994. Livestock grazing in the rest of the area last occurred in the 1930s or 40s. With additional tree and shrub growth, current conditions could potentially support wildfires that are lethal to trees and other vegetation (Gast et al. 1991, Quigley and Cole 1997, Schmidt et al. 2002).

II. **Proposed Action -- Study Design and Hypothesis from Simulation of Results**

The objective of the study is to test differences in stand structural development over time using four silvicultural treatments in second-growth, even-aged ponderosa pine. All trees 21-inch dbh (diameter at 4.5 ft. height) and above would be retained.

Table 1. Description of silvicultural treatments in Oz Research Project.

TREATMENT	**DESCRIPTION**
No Treatment	This is the control treatment
Uneven-age Group Selection	One to four acre openings totaling 10-20% of the stand with thinning from below to SDI[1] 110-140/acre (see below) between the openings. The goal would be to develop 3 or more age classes with the next entry (timber removal) in 10 years. This is a regeneration method. Openings will be planted if natural regeneration is insufficient.
Wide Thinning	Heavier thinning from below to a SDI[1] of 75-100/acre resulting in wider spacing of leave trees (typically leaving 40-50 large trees/acre).
Uneven-age Single Tree Selection	Single tree selection evenly across all diameter classes resulting in a SDI[1] of 75-100/acre. Thinning would be from below and above, leaving the most vigorous trees, and creating a stand with an "uneven-aged" J-shaped diameter distribution. Some co-dominant trees with dbh smaller than 21 inches would be removed along with smaller trees. Some tree planting will be done to achieve diameter distribution objectives. This treatment is also a regeneration harvest method.

[1] SDI (Stand Density Index) is a measure of stand density. SDI is the equivalent number of 10-inch dbh (diameter at 4.5 feet height) in a stand.

Thinning from below, or low thinning, primarily removes intermediate and smaller trees leaving more vigorous dominant and co-dominant trees. Except in unusual circumstances where it might detract from study objectives, no trees less than 21 inches in diameter that have yellow bark characteristic of older, fire-resistant ponderosa pine would be cut, regardless of tree diameter.

Mechanical harvest would likely be accomplished using modern, track-mounted machines equipped with a felling head (harvester shear), and felled trees would be whole-tree yarded to designated skid-trail networks and transported to landings using grapple skidders. Mechanical harvesters would only be allowed to make a limited number of equipment passes on any site-specific area. Skidders would be restricted to designated skid trails at all times. Main skid trails would be spaced approximately 100 feet apart on average. Most of the slash generated from harvest activities would be machine piled and burned at the log landings. The project does not require any new permanent or temporary road accesses, except that temporary access will be made for logging trucks to get to log landings located adjacent to or near existing roads.

Project proponent, Stephen Fitzgerald of Oregon State University, selected these treatments because he believes they offer the greatest opportunity for future application in presently homogenous (structurally simple) Central Oregon forests.

Snags are not abundant in project sites because of their relative young age and past history. The Oz Research Project will create additional snags by killing some trees but leaving them standing instead of removing them, especially in group selection openings.

The project also examines three fuels treatment methods in conjunction with the primary silvicultural treatments described above. The fuel sub-treatments, with replications, will be mechanical shrub treatment or mowing of shrubs, prescribed underburn, and no fuels treatment. Each project unit, except control stands, will have all three of these fuels sub-treatments. These are the most common fuel treatments used currently in Central Oregon forests. Whole-tree logging should leave little need to pile and burn logging slash, except at log landings where that will be done. Mowing may be done in the spring or in the fall. Prescribed burns will take place in the spring.

Treatment units (not control stands) may be planted and half of the planted seedlings have mulch mats placed around seedlings to test the effectiveness of that method in limiting competing vegetation. Stocking and growth of natural tree regeneration will also be measured and documented. Research will analyze results in relation to distances from the edges of group selection openings. Additional site preparation and planting may be done within group openings if there is no positive trend toward meeting minimum stocking requirements within 3 years of harvest.

Treatments were assigned randomly to each of three Blocks within the study area for a total of 12 treatment units (3 blocks x 4 treatments). Experimental units, including the control stands, totaled 723 acres (Table 1). Thinning and fuels treatments will occur on 553 acres.

Table 2. Unit (stand) prescriptions (see Figures 2, 2A, 2B, and 2C for maps).

Block*	Proposed Oz unit(s)	Stand **	Acres	Prescription
1	-	257	58	No treatment
1	1	256	30	Wide thinning
1	2	258	51	Single tree selection
1	3, 11-14	259	41	Group selection

2	-	266	58	No treatment
2	8	265	81	Wide thinning
2	10	268	69	Single tree selection
2	9, 21-23	267	53	Group selection
3	-	260	54	No treatment
3	6-7	263-4	108	Wide thinning
3	4	261	43	Single tree selection
3	5, 15-20	262	77	Group selection

*Block 1 is located near the 1801 road and south of the High Desert Museum. T. 19 S., R. 11E., sections 5 and 6. Forest Plan designation: MA 7 Deer habitat.

Block 2 is located is located along the 40 road (Sunriver access) immediately west of Hwy 97. T. 20 S., R. 11 E., sections 3 and 4 and T. 19 S., R 11 E., section 34. Forest Plan designation: MA 9 Scenic views along Hwys 40 and 97 and otherwise MA 8 General Forest.

Block 3 is located southeast of Block 2, east of Hwy 97 along the 9720 road. T. 20 S., R. 11 E., sections 11 and 12. Forest Plan designations: MA 8 General Forest, MA 9 Scenic Views (9720 road), and adjacent to MA 15 Old Growth.

**Stand numbers are from the former Kelsey planning project.

Pre-treatment vegetation data was collected in 2002 and 2003, and some re-measurement will be done prior to vegetation management activities. Variables measured included trees per acre, tree diameter, crown class, mistletoe rating, tree damage and defect, tree height and crown dimensions, snags (diameter, height, decay class), down woody material (diameter, length, decay class), percent cover of understory vegetation (forbs, grasses, and shrubs), and number of tree seedlings less than 4.5 feet height. The degree of existing soil compaction was recorded using a soil penetrometer in the control and wide spacing treatments. Additional data that may be collected may include tree cover data, big game hiding cover information, understory vegetation response, and species composition and density. These data, along with ocular observations, will permit scientists and managers to evaluate differences due to treatment in forest structure and diversity, forest development, forest understory response, overstory tree response, seedling (regeneration) response, crown fire potential, mule deer (*Odocoileus hemionus*) habitat, white-headed woodpecker (*Picoides albolarvatus*) habitat, and aesthetic appeal. Results would be evaluated after 5 and 10 years, and possibly at 10-year intervals after that. Repeated similar treatments would be needed at 10-20 years intervals to maintain stand management objectives for the experiment.

Fitzgerald et al. (2005) conducted a simulation of results 40 years into the future using the Forest Vegetation Simulator (FVS; Stage 1973, Wycoff et al. 1983), including the Fire and Fuels Extension Model to FVS. They simulated fuel dynamics and potential fire behavior attributes over time (Reinhardt and Crookston 2003) including flame length under severe and moderate fuel moisture and weather conditions, and torching and crowning indices. See their paper (on file in Deschutes Supervisors Office and Bend/Ft/Rock RD office, and part of this project file) for more detail. They simulated and evaluated results for only two treatments, heavy thinning from below and uneven-age single tree selection (see previous descriptions) with pile and burn treatment for logging slash. Simulation results showed that thinning methods could significantly affect stand structural attributes, which in turn affect resistance to wildfire, as well as insects and disease. Thinning from below to a wide thinning increased overall resistance to wildfire by decreasing flame lengths under severe conditions, and increasing torching and crowning indices compared to uneven-age single-tree selection treatment. This hypothesis from simulation is supported by wider research findings (e.g., Agee 2002) that retention of the largest trees, increasing canopy base height by reducing ladder fuels, and reducing canopy fuels will improve resistance to wildfire. Larger trees have improved survival from fire because of thicker bark.

Study results should be applied in context of the surrounding landscape. Overall fuel loading in the surrounding landscape, extreme weather conditions, and site factors such as slope, aspect, and elevation can also affect fire behavior and tree and stand survival.

In the future the project may also include measurement and monitoring of wildlife habitat variables as well as presence or abundance of some species. Opportunities to compare results to a designated "old growth" ponderosa pine stand adjacent to and to the northwest of Block 3, unit 7 (Fig. 2C) will also be explored. This stand is in a latter stage of succession than the Oz Research Project units.

Decision

I have decided to implement the OZ research project, as designed by Oregon State University extension faculty Stephen Fitzgerald, and as described above. The Oz Research Project is designed to be consistent with the desired conditions specified in the Forest Plan and the standards and guidelines contained therein. The following mitigation measures, design criteria and monitoring requirements will be applied on the Oz project to insure Forest Plan consistency.

Mitigation Measures

Vegetation Diversity

1. Except in unusual circumstances where it might detract from study objectives, no trees less than 21 inches in diameter that have yellow bark characteristic of older, fire-resistant ponderosa pine would be cut, regardless of tree diameter.
2. In general, prescribed burns will retain at least 40% of the live crown ratio on 95 % of dominant and co-dominant trees (larger trees remaining after thinning).

Wildlife

3. **Large down logs:** During prescribed burn operations, avoid direct ignition of snags and CWM that is greater than 8 in diameter (large end) and 6 feet in length.
4. **Snags:** Retain all existing snags (including soft) as wildlife trees for roosting and foraging except where impractical because of human safety, other resource protection (such as Wildland Urban Interface), or project logistics (such as prescribed fire treatments).
5. Protect the wildlife guzzler to the west of unit 4 during any implementation of treatments.

Soils

6. Avoid operations during periods of high soil moisture, as evidenced when rutting with standing water occurs.
7. Soil displacement will be minimized to the extent possible, including sharp turning during the mowing operation.
8. Some skid trails within Oz units 4, 5, 6, 7, 15-20 may be subsoiled to reduce detrimental conditions to a maximum of 20% (if needed).

Hydrology

9. In all units, skid trails and temporary roads to log landings would be designated prior to the logging operations. Designating yarding and transportation systems would ensure a minimum of 80 percent of an activity area would be left in a condition of acceptable productivity potential for trees. This will include system and temporary roads, landings, and spur roads and skid trails and trails. Skid trails, landings and temporary roads would be rehabilitated and stabilized following tree removal. (Forest Plan SL-1 & SL-3); (Timber Management BMP T-11). No new roads will be constructed.

Botany and Invasive Plants

10. Clean all equipment before entering *and after leaving* National Forest System lands. Remove mud, dirt, and plant parts from project equipment before moving it into the project area and before proceeding to the next project.
11. The district botanist or her representative will inspect any gravel or fill material that is brought into the project for the presence of noxious weeds. No gravel or fill material is expected to be brought into the project area.
12. No landings, skid trails, or temporary roads will be placed on the weed site at the junction of Roads 40 and 4001 (in or adjacent to unit 8).
13. Vehicles will not park at the weed site at the junction of Roads 40 and 4001 (in or adjacent to unit 8).
14. The weed site at the junction of Roads 40 and adjacent to unit 8 will be hand pulled prior to project implementation so that weed seeds do not spread into unit 8.

Project Design Criteria

1. The district botanist or her representative will flag out the known weed population (within and adjacent to unit 8).
2. Unit 10, which lies adjacent to Highway 97, will not have machinery in it within 30' of the edge of the road shoulder. This is to prevent the heavily weed-laden seedbank from entering newly-disturbed forest.
3. Unit layout, and designation of logging skid trails and landings, will insure no impact on control stands, the long-term site productivity study site, and the stand designated for future old growth adjacent to unit 7.

Monitoring

As mentioned, units 4, 5, 6, 7, 15-20 will be monitored for soil compaction.

Areas of concern for noxious weeds, within or adjacent to project sites, will be monitored annually, if possible, after the project ends. Any noxious weeds found should be removed.

Project sites will be monitored every five years until research objectives have been met (perhaps 50 years pending funding). Habitat variables listed in Section III Study Design will be re-measured to document changes with time.

Reason for Categorical Exclusion and Absence of Extraordinary Circumstances

This action is categorically excluded from documentation in an environmental impact statement or an environmental assessment because it is a research project and falls within a category of proposed actions in Forest Service Handbook 1909.15, Sec 31.11(a)(3), Inventories, research activities, and studies, which is a Category established by the Secretary of Agriculture for which a Project or Case File and Decision Memo are not required.

The categorical exclusion is appropriate in this situation because there are no extraordinary circumstances potentially having effects which may significantly affect the environment. I considered suggestions made by interested publics and have been able to accommodate them with minor modifications to the document (see public involvement below).

Several resource conditions were considered in determining whether extraordinary circumstances related to the proposed action warrant further analysis. The mere presence of one or more of these resource conditions does not preclude use of a categorical exclusion. It is the degree of the potential effect on

these resource conditions that determines whether extraordinary circumstances exist. Resource conditions that were considered include:

a. *Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service Sensitive Species:* The Wildlife Biological Evaluation (BE) determined there would be "**No Effect**" to any Proposed, Endangered, Threatened, Sensitive (PETS) or Candidate wildlife species or associated habitat (the BE is in the project file). The project does **not** include habitat for any wildlife or fish (aquatic or riparian) PETS or Candidate wildlife or fish species. Use of the area by the recently delisted bald eagle is incidental and opportunistic, and so no effect on bald eagle (*Haliaeetus leucocephalus)* is expected to occur. Oz Research Project sites are 2-4 miles from open water (Deschutes River) used by bald eagles. The BE for Sensitive plants determined the proposed Oz project would have no impact on Proposed, Threatened, or Sensitive plant Species (the BE is in the project file).

b. *There are no flood plains, wetlands, or municipal watersheds* within the research project boundary. The closest water is the Deschutes River at Sunriver about two miles west of Oz Block 2. There are no intermittent streams.

c. *No congressionally designated areas* (wilderness, wilderness study areas, or national recreation areas) are within or affected by the proposed research plots.

d. *There are no inventoried roadless areas* within or near any of the research plots.

e. *There are no research natural areas* within any of the proposed treatment units.

f. The research proposed will have no effect to *American Indian religious or cultural sites.*

g. The research plots, as designed, comply with Section 106 of the National Historic Preservation Act, and will have *no effect on archaeological sites, historic properties or areas.*

My conclusion is based on a review of the record that shows a thorough review of relevant scientific information, a consideration of responsible opposing views, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. Based on the conclusions regarding the effects to the resource conditions listed above, I have found that no extraordinary circumstances exist with the proposed project activities that may result in a significant individual or cumulative effect on the quality of the human environment.

Public Involvement

The original proposed Kelsey project, which included the Oz project, was listed in the Schedule of Projects (SOP) for the Deschutes and Ochoco National Forests and the Prineville District of the BLM beginning with the summer 1999 issue. The Oz Research Project was listed separately in the Schedule of Projects for the Deschutes National Forest, and on the Deschutes National Forest website, on October 1, 2007.

The complete record of the public involvement process to date is available for review in the project file at the Bend-Fort Rock Ranger Station. The Kelsey Project (including the Oz Research Project) was presented to the public in a letter in October 2001. That letter was sent to approximately 220 individuals, businesses, and organizations that had expressed an interest in the project development process. Included in this mailing were the Confederated Tribes of Warm Springs, Burns Paiute Tribe, and The Klamath Tribe. The Bend Bulletin, the local newspaper, reported on the Proposed Actions and the scoping letter was placed on the Deschutes and Ochoco National Forest web site. A draft Kelsey environmental

assessment was sent to the public for 30-day comment on May 6, 2004 and a Decision Notice and Finding of No Significant Impact was sent to the public on September 29, 2004. The project was scoped again as part of an Environmental Impact Statement (EIS) preparation process on March 25, 2005. The draft Kelsey EIS was sent out for public comment in March 2006 and comments were received subsequently. After all these opportunities for public review, only one comment was specific to the Oz research project. The commenter was opposed to studies that required logging, soil disturbance, and disruption of the ecosystem

The project lies within the Sunriver Community Wildfire Protection Plan (CWPP) and Greater Bend CWPP, plans developed collaboratively by local communities. The project reduces fire hazard and serves to develop or fine-tune future fuel management prescriptions. It thereby directly supports the purposes of those CWPPs that were developed through local collaborative efforts between 2004 and 2006.

On May 10, 2007, the Central Oregon Intergovernmental Council (based in Redmond, Oregon) sponsored a one day "Central Oregon Forest Science and Stakeholders" workshop. At that workshop, Stephen Fitzgerald presented the Oz study proposal and the results of the simulation analysis described in section II, Study Design (Fitzgerald et al. 2005). Comments following the presentation suggested much of the audience thought the study was worthwhile and should be pursued. Deschutes National Forest staff listened and decided to pursue this project.

A field visit to the project with collaborative intent was made with the individual who made the one public comment mentioned earlier, two of her colleagues, a representative of Oregon Department of Fish and Wildlife, Stephen Fitzgerald, and two USDA Forest Service staff on 30 August 2007. Some modifications were made to the project based on discussions that day: snag creation in treatment units, movement of one group selection opening to maintain a special snag, and generally maintaining all ponderosa pine with "yellow-bark" character (older remnant trees). Scientists may also measure and monitor additional vegetation and wildlife variables if additional research partnerships can be developed.

Findings Required by Other Laws

This decision is consistent with the Deschutes National Forest Land and Resource Management Plan as amended, as required by the National Forest Management Act. The project includes parts of three management areas for which the Forest Plan provides guidance, and is adjacent to a fourth management area.

MA 7 Deer Habitat: vegetation management is to provide optimum habitat conditions on deer winter and transition ranges while providing some domestic livestock forage (no active grazing allotments in project area), wood products, visual quality and recreation opportunities. The project maintains forage and cover for big game (Forest Plan p. 4-113). None of the project units presently meet the recommendation for thermal cover (crown cover > 40%, Forest Plan p. 4-114). This management area is restricted to Block 1 (Table 2) for this project.

MA 8 General Forest. Timber production is emphasized while providing for forage production, visual quality, wildlife habitat, and recreation opportunities (Forest Plan p. 4-117). Parts of Block 2 and all of Block 3 are in this management area. The forest will harvest some trees that might eventually die from overcrowding and improve stand growth.

MA 9 Scenic Views. The goal is to provide high quality scenery representing the natural character of central Oregon (Forest Plan p. 4-121). This management area is limited in this project to foreground views along Hwy 97 and the 40 Road in Block 2, and to foreground views from the 9720 road in Block 3. The project will maintain or enhance future views of pine forest with big tree character. Evidence of logging operations (e.g., skid trails, burn piles) will not be evident from those travel routes upon project completion.

MA 15 Old Growth. The northwest tip of proposed Oz unit 7 abuts a designated old growth stand. Old Growth management areas are intended to provide naturally evolved old growth forest ecosystems and values associated with those ecosystems.

Forest Plan direction for Uneven-aged Management:

Uneven-aged management is proposed in ponderosa pine stands that are immature and even-aged (LMRP TM-18). The portion of Standard and Guideline TM-18 for this stand condition reads as follows:

> Uneven-aged management can also be applied in immature, even-aged stands in the ponderosa pine community types, particularly where a remnant multi-story structure currently exists. In this case the transition to an uneven-aged structure would occur over two or more entry cycles. In these stands the silvicultural objective is to retain a remnant mature or overmature stand component of three to six trees which are free of disease and have good crowns, moderate vigor and which can contribute to the development of a multi-storied stand structure. It is not appropriate to retain slower growing or suppressed trees rather than the best growing trees of the same age as the dominant even-aged stand simply to increase the uneven-aged appearance. Following the final commercial thinning, natural regeneration can be encouraged to further the development of an uneven-aged structure. In this situation, consideration must be given to the competitive effects between the emerging understory and the commercially thinned stands. Wider spacing of the thinned stand would generally be recommended.

Stands proposed for uneven-aged management are generally on slopes less than 30 percent (TM-23; slopes are less than 10% in Oz Research Project sites). Dwarf mistletoe will be at low levels and is projected to be maintainable at low levels in stands proposed for uneven-aged management (TM-32; true of Oz Research Project sites).

Uneven-aged management within the ponderosa pine community type can be applied using either individual tree or group selection silvicultural systems (TM-15). The study proposes to use both systems. With both uneven-aged management systems, establishment of a new age class would occur either by planting or through natural regeneration. With individual tree selection, trees would be thinned wide enough to allow ponderosa pine regeneration to establish under residual trees. Stands treated in this manner would continue to be greater than minimally stocked.

Even-aged groups may be as small as 0.25 acre or, in rare cases, as large as 6 or 7 acres (TM-16). Usually groups are less than 2 acres in size and no wider than twice the height of mature trees in the stand (TM-16). With uneven-age group selection, openings of approximately 1 to 4 acres in size would be created in the Oz Research Project. This size is considered small enough to allow seedlings to occur from trees along opening edge yet large enough to give tree regeneration room to grow and provide habitat for a variety of wildlife species as regeneration matures. Height of mature trees in stands is estimated to be 85 to 95 feet. Height of majority of trees averages 60 feet. Groups would be 160 to 370 feet wide, which is approximately two to four times the height of mature trees in the stands. Size of group openings would be less than the maximum size guideline.

Uneven-aged management is most applicable where there is reasonable assurance that natural regeneration will occur within ten years (TM-38). Within areas proposed for uneven-aged management using group selection, there is a reasonable assurance natural regeneration could occur within ten years for the following reasons:

1. Much of ponderosa pine seed disseminates within 100 feet of the seed source with a maximum potential for dispersal of seed up to approximately 530 feet into a clearcut with strong winds (Barrett, 1979). Assuming a 4-acre opening (217 feet by 217 feet) and variable wind direction, approximately

75 percent of the opening would be within the likely 100 foot distance for seed dispersal. All of the opening would be within the maximum distance for seed dispersal.

2. Ponderosa pine seed from trees 60 to 160 years are more viable than seed from younger or older trees (USDA Forest Service, 1965). At approximately 75 years of age, trees adjacent to openings are of an age that favors production of viable seed.
3. Potential exists for adequate seed to be present within the next 10 years. Seed production is not regular in the Pacific Northwest (Barrett, 1979). On the average, adequate seed crops can be expected every 4 to 5 years (Barrett, 1979).

Additional site preparation and planting may be done within group openings if there is no positive trend toward meeting minimum stocking requirements within 3 years of harvest.

Research projects are exempt from "Eastside Screens" (Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales, also referred to as Regional Forester's Forest Plan Amendment #2) that amended the Forest Plan in 1995. Nevertheless, no trees over 21 inches dbh will be harvested and research results will be applicable within that constraint.

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Youngblood, A., T. Max, and K. Coe. 2004. Stand structure in eastside old-growth ponderosa pine forest of Oregon and northern California. Forest Ecology and Management 199: 191-217.

Implementation Date

This preliminary Decision Memo is subject to a 30-day comment period. Comments and a response to comments will be incorporated into a Final Decision Memo. The Final Decision Memo will then be subject to a 45-day appeal period. Implementation can then occur, dependent upon comments received and disposition of the appeal, if one is received.

Administrative Review or Appeal Opportunities

This decision is subject to public notice, comment, and appeal pursuant to 36 CFR 215.5. Written, facsimile, hand-delivered, oral, and electronic comments concerning this action will be accepted for 30 calendar days following publication of a notice in *The Bulletin*. The publication date in the newspaper of record is the exclusive means for calculating the comment period for this proposal. Those wishing to comment should not rely upon dates or timeframe information provided by any other source.

Written comments must be submitted to: Phil Cruz, Bend Ft Rock Ranger District, 1230 NE 3rd Street, A-262, Bend, OR 97701. The office business hours for those submitting hand-delivered comments are: 7:45 A.M. to 4:30 P.M. Monday through Friday, excluding holidays. Oral comments must be provided at the Responsible Official's office during normal business hours via telephone (541) 383-4000 or in person. Electronic comments must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), or Word (.doc) to comments-pacificnorthwest-deschutes-bend-ftrock. In cases where no identifiable name is attached to a comment, a verification of identity will be required for appeal eligibility. If using an electronic message, a scanned signature is one way to provide verification. Electronic comments must be submitted as part of the actual e-mail message, or as an attachment in Microsoft Word, rich text format, or portable document format only. E-mails submitted to e-mail addresses other than the one listed above, in other formats than those listed, or containing viruses will be rejected.

It is the responsibility of persons providing comments to submit them by the close of the comment period. For electronically mailed comments, the sender should normally receive an automated electronic acknowledgment from the agency as confirmation of receipt. If the sender does not receive an automated acknowledgement of the receipt of the comments, it is the sender's responsibility to ensure timely receipt by other means. It is the responsibility of persons providing comments by electronic means to ensure that their comments have been received. Individuals and organizations wishing to be eligible to appeal must meet the information requirements of 36 CFR 215.6.

Contact Person

For additional information concerning this decision or the Forest Service notice, comment and appeal process, contact Robin Vora at (541) 383-5766, or Beth Peer at (541) 383-4769.

[signature reserved for Final Decision Memo] _____

PHIL CRUZ Date
District Ranger
Bend/Ft. Rock Ranger District
Deschutes National Forest

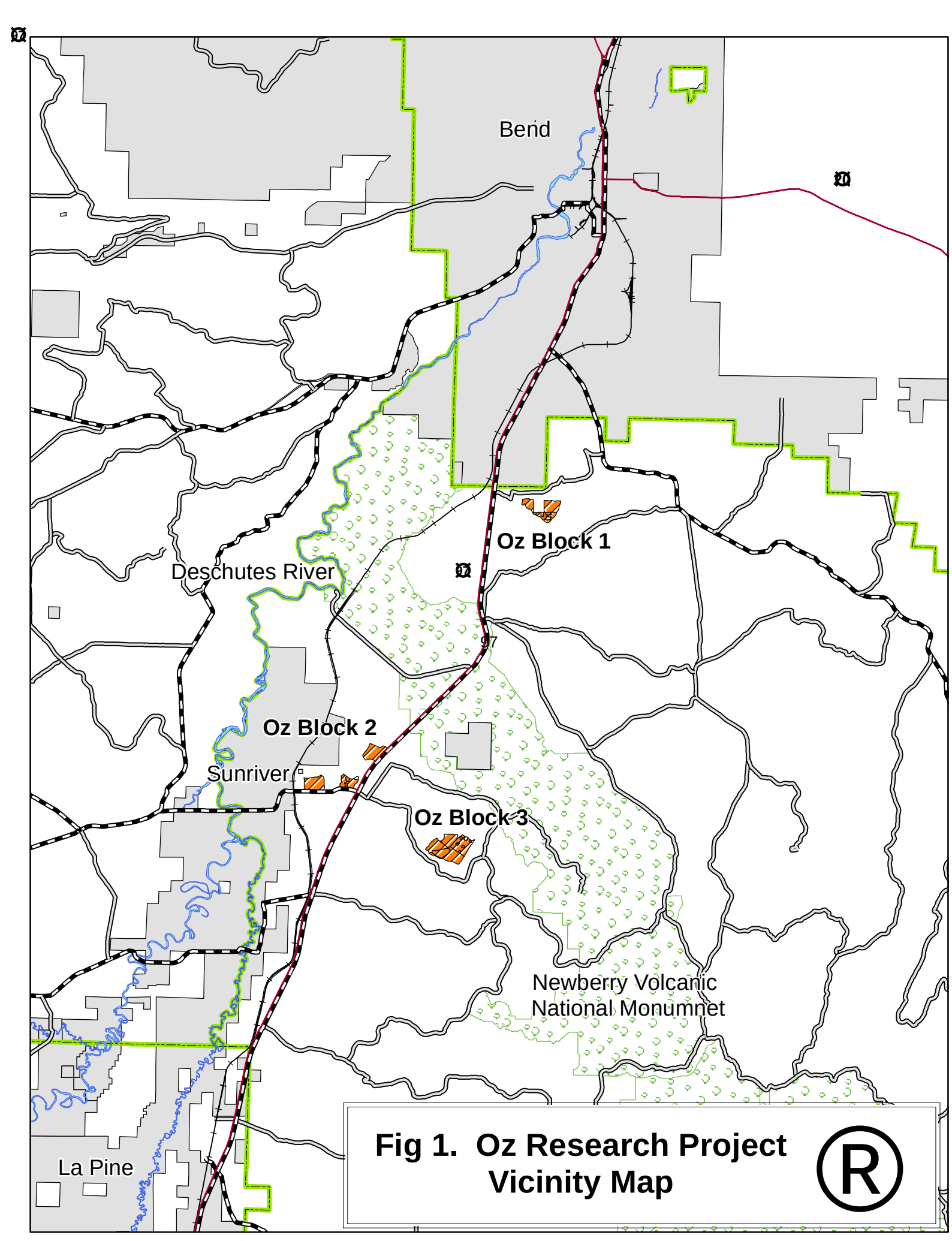

Fig 1. Oz Research Project Vicinity Map

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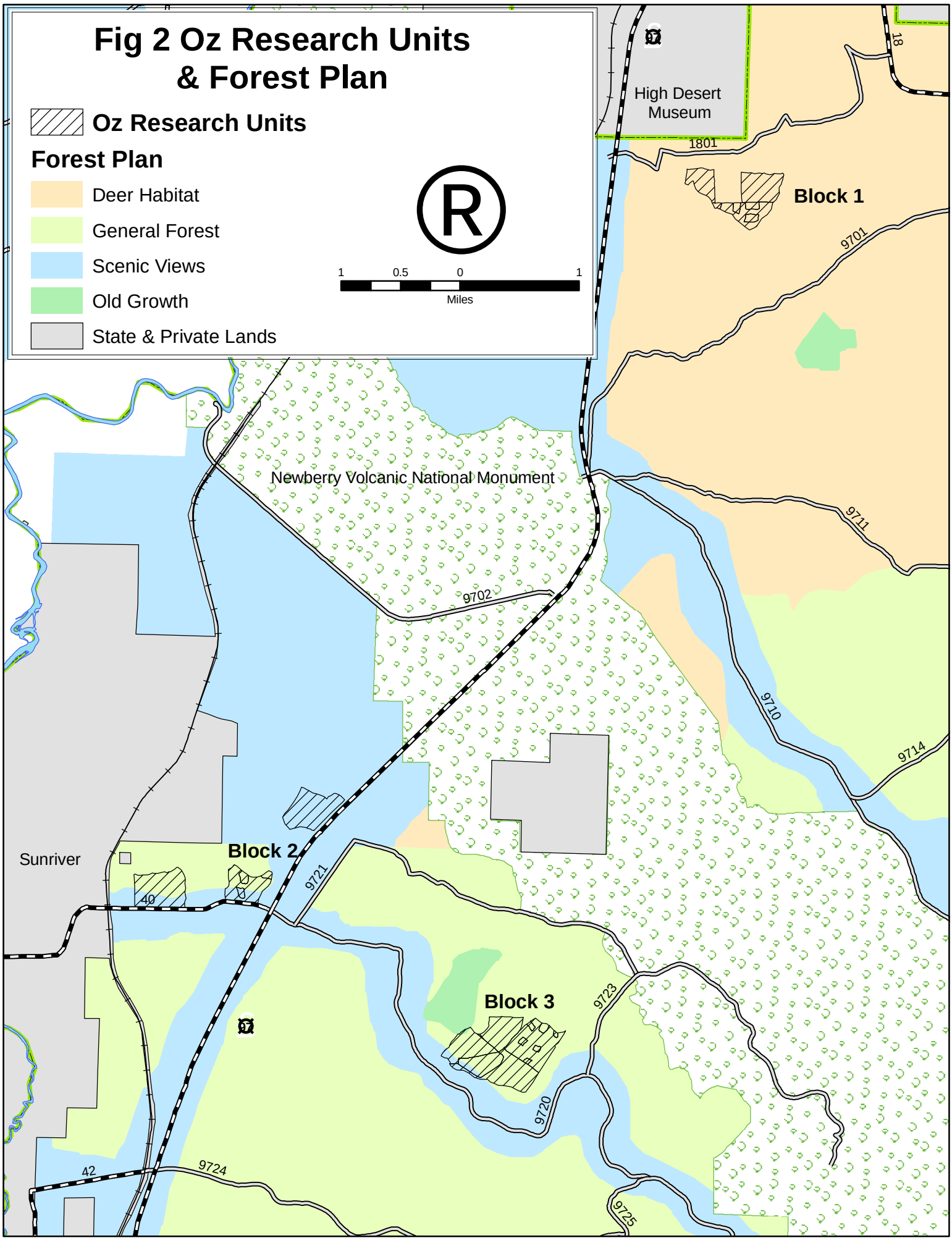
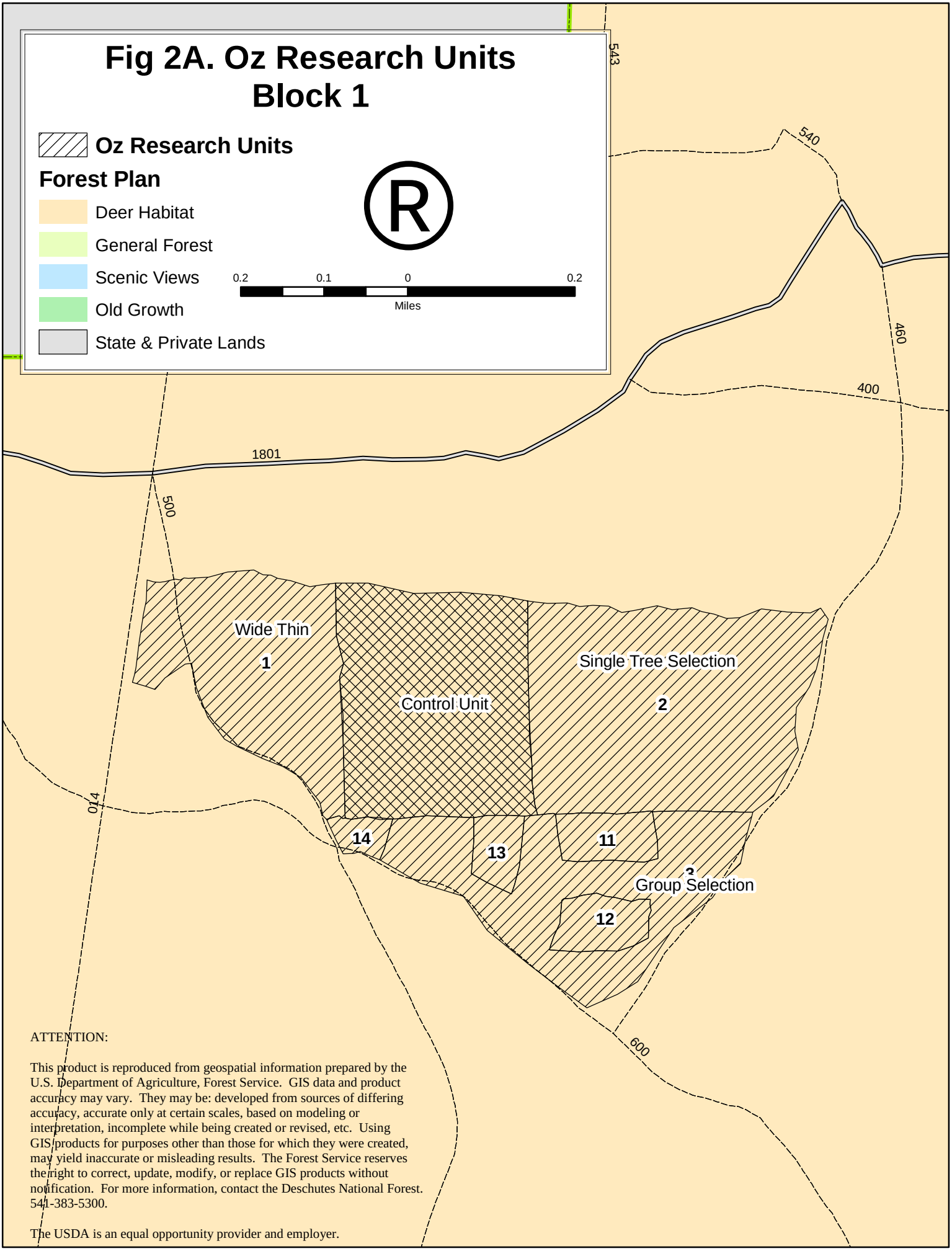


Fig 2 Oz Research Units
& Forest Plan
Oz Research Units
Forest Plan
Deer Habitat
General Forest
Scenic Views
Old Growth
State & Private Lands
1
0.5
0
1
Miles
High Desert
Museum
1801
Block 1
9701
Newberry Volcanic National Monument
9711
9702
9710
9714
Sunriver
Block 2
9721
40
Block 3
9723
9720
42
9724
9725



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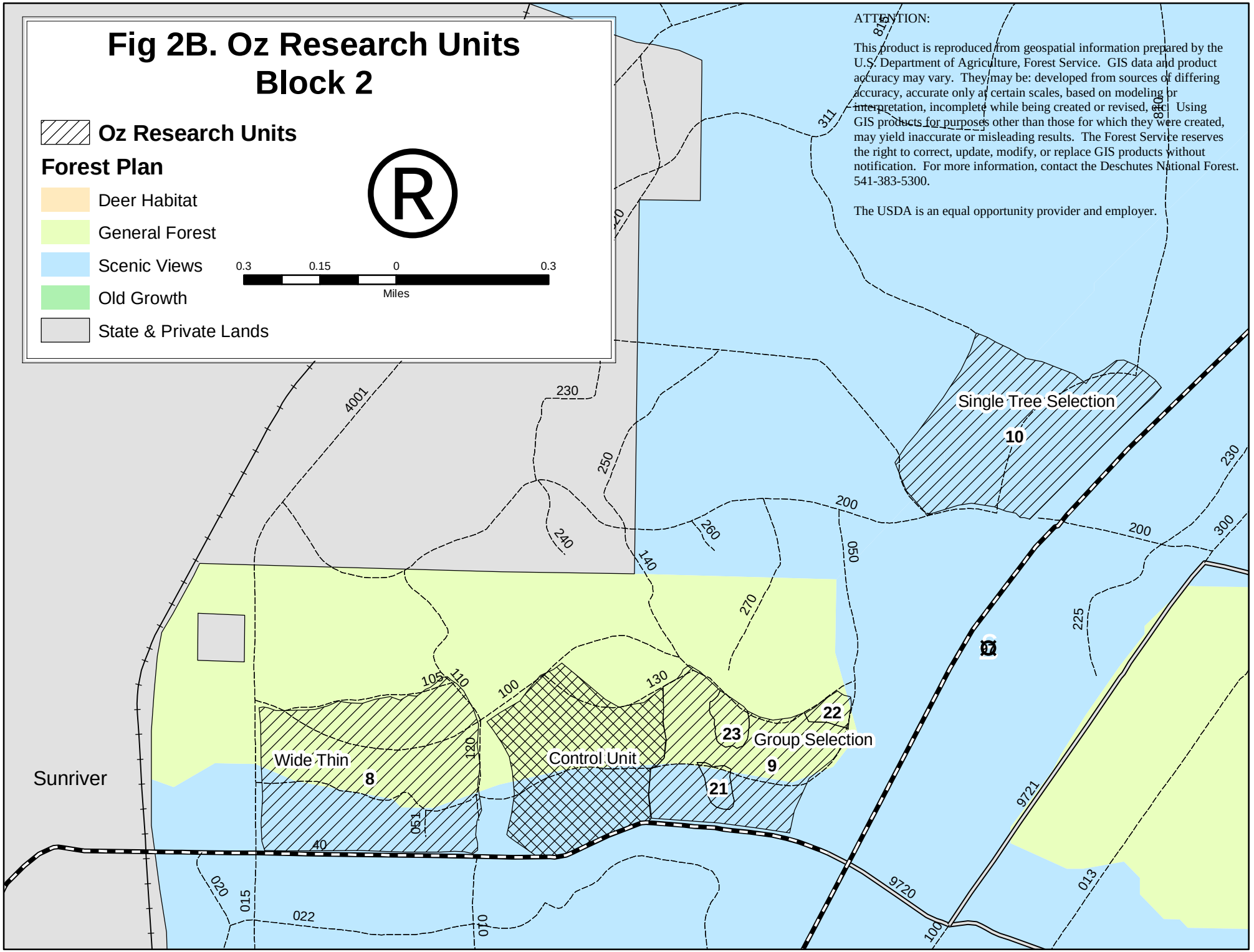
Fig 2B. Oz Research Units
Block 2
Oz Research Units
Forest Plan
Deer Habitat
General Forest
Scenic Views
Old Growth
State & Private Lands
0.3 0.15 0 0.3
Miles
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Single Tree Selection
10
Wide Thin
8
Control Unit
Group Selection
9
21
22
23
Sunriver
4001
9720
9721
311
808
230
250
200
240
260
140
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100
130
120
051
40
020
015
022
010
013

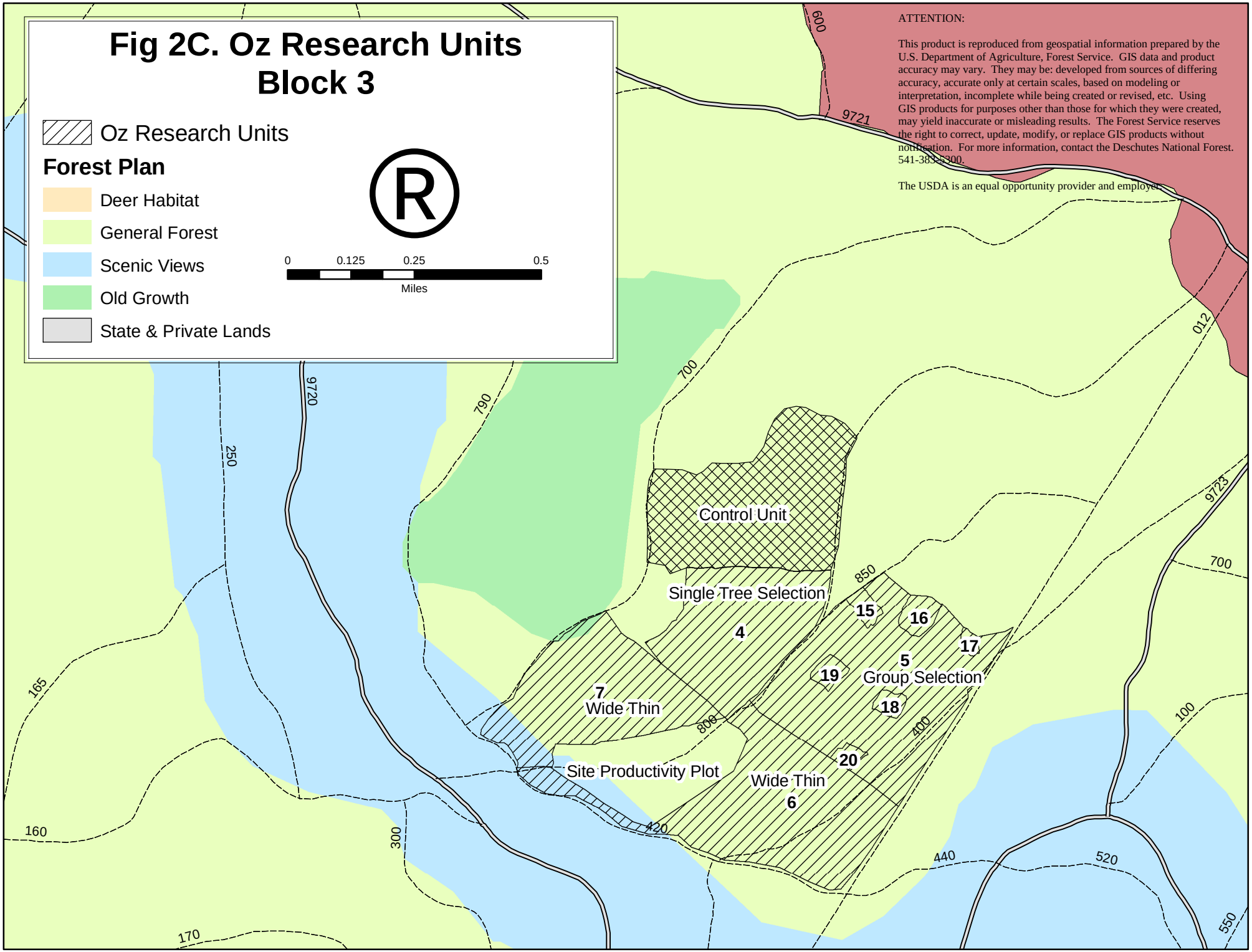
Fig 2C. Oz Research Units
Block 3
Oz Research Units
Forest Plan
Deer Habitat
General Forest
Scenic Views
Old Growth
State & Private Lands
0
0.125
0.25
0.5
Miles
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Control Unit
Single Tree Selection
4
15
16
17
5
Group Selection
19
18
7
Wide Thin
20
Wide Thin
6
Site Productivity Plot
9721
9720
9723
600
700
790
850
400
420
440
520
550
250
300
165
160
170
100
012

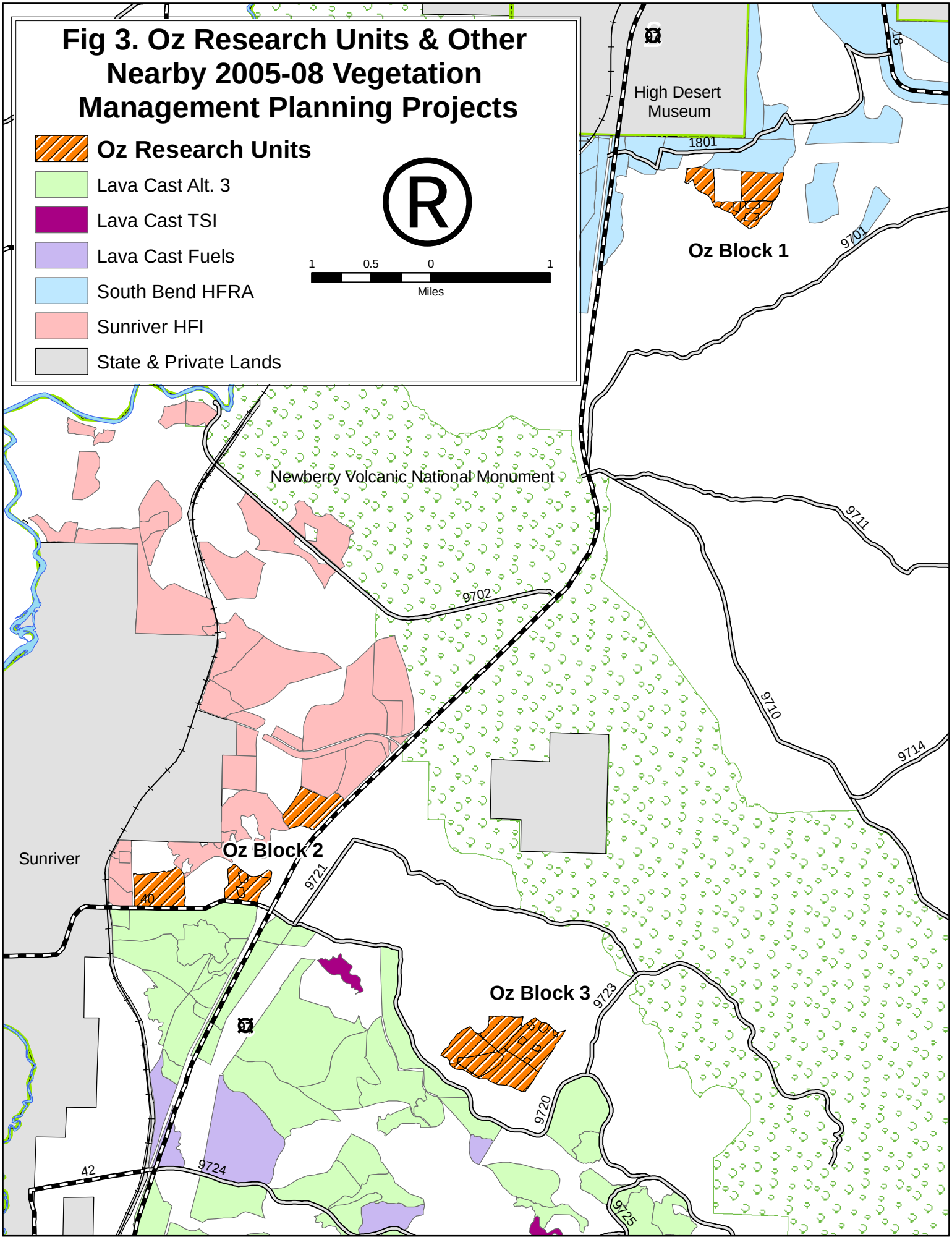
Fig 3. Oz Research Units & Other Nearby 2005-08 Vegetation Management Planning Projects
Oz Research Units
Lava Cast Alt. 3
Lava Cast TSI
Lava Cast Fuels
South Bend HFRA
Sunriver HFI
State & Private Lands
1
0.5
0
1
Miles
High Desert Museum
1801
Oz Block 1
9701
Newberry Volcanic National Monument
9711
9702
9710
9714
Sunriver
Oz Block 2
9721
40
Oz Block 3
9723
9720
42
9724
9725